Building Startup Systems

Objective

The goal of the Second Section is to apply your skills to develop a non-trivial digital product.

You will design, implementing and deploying a workable system that is suitable for demo and early users.

The course project is a ***Man-in-a-Van*** hailing app (think über for movers and junk-haulers)

Audience

It is expected that you:

- Are familiar with git
- Have set up continuous integration and have written a circle.yml file
- Can code a RESTful API
- Are familiar with SQL
- Know how to build a single-page-application (SPA)
- Are familiar with cloud deployment

Logistics

- Class here every Weds 3:10 to 5:50
- Use Slack
- Pay attention + ask questions
- Adam Office Hours after class on Weds
- Rahul Office Hours before class on Weds 12:30-2:30pm

Grading

100% of your grade is earned from completing the course project

Four Buckets of Points Possible. Each Bucket 3pts possible

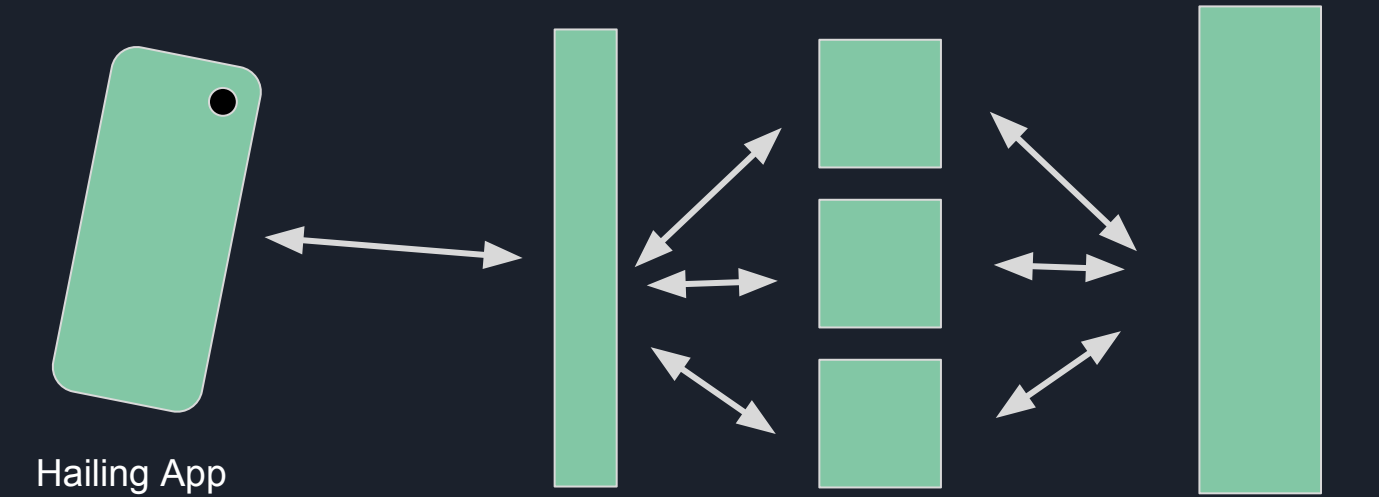
1. **Mobile Client** written in Ionic or ReactJS Native
2. **API** in any language you like
3. **Storage + Processing** (e.g. Database, Storage, Thumbnail Processing, etc)
4. **DevOps** (e.g. Continuous Integration, Deployment, Logging and Monitoring)

Your individual grade = (team accomplishment) x (your understanding)

(No points for attendance, keep repos private, source code submission mandatory)

01. Architecture + Platform

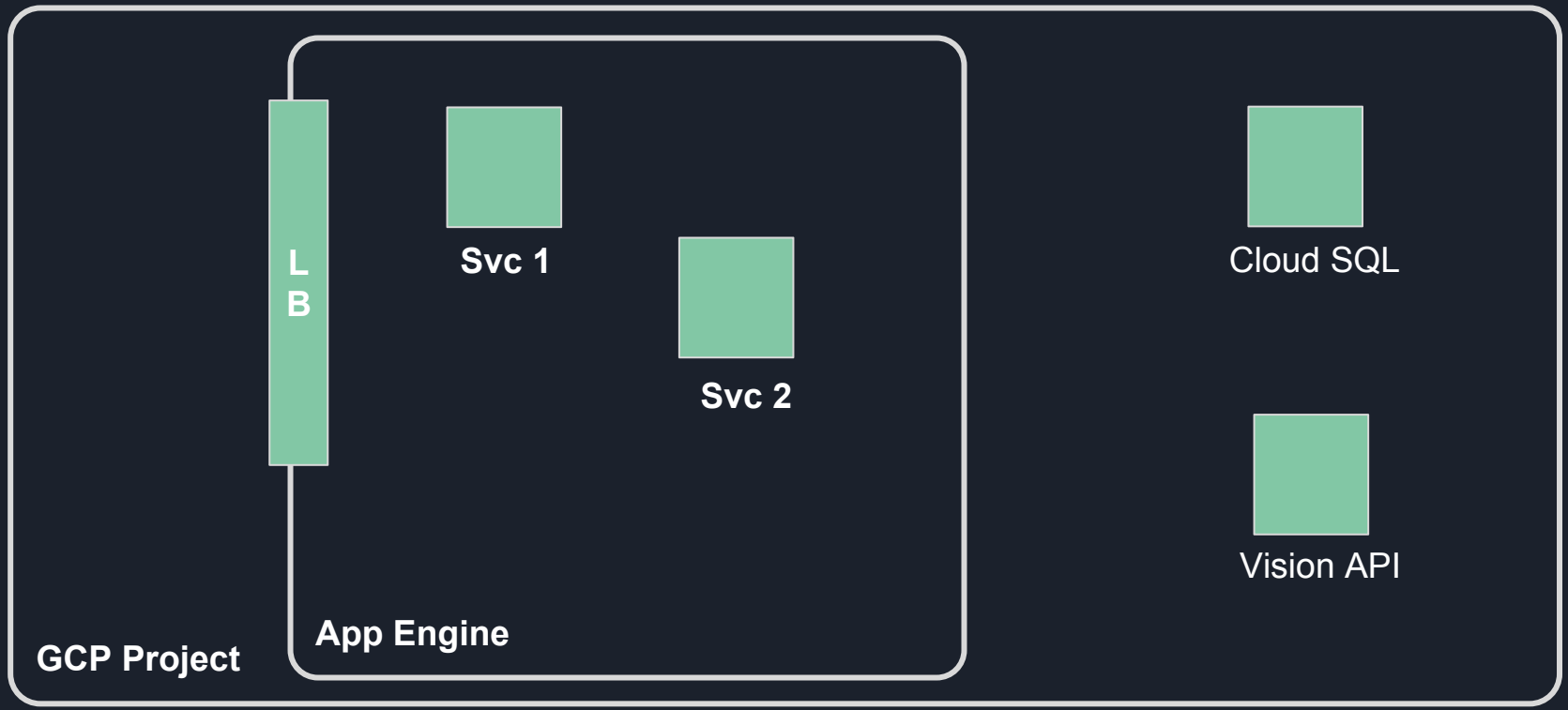
Default Stack



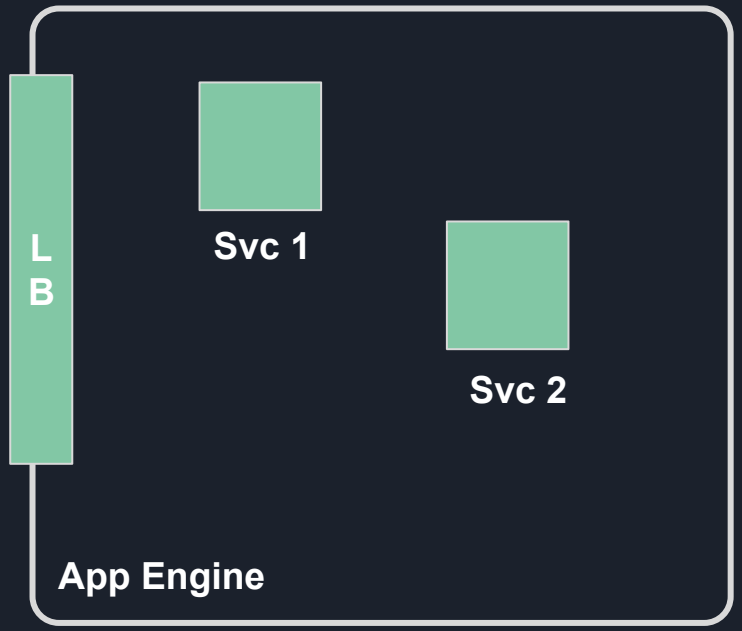
We will be using GCP App Engine

- GCP and AWS are competitive platforms offering similar tech
- App Engine is designed to make robust micro-services easy
- Docker-based
- Automatic Rolling Deployments, HTTPS and Load Balancing
- Automatic Logging + Monitoring

GCP + App Engine Concepts

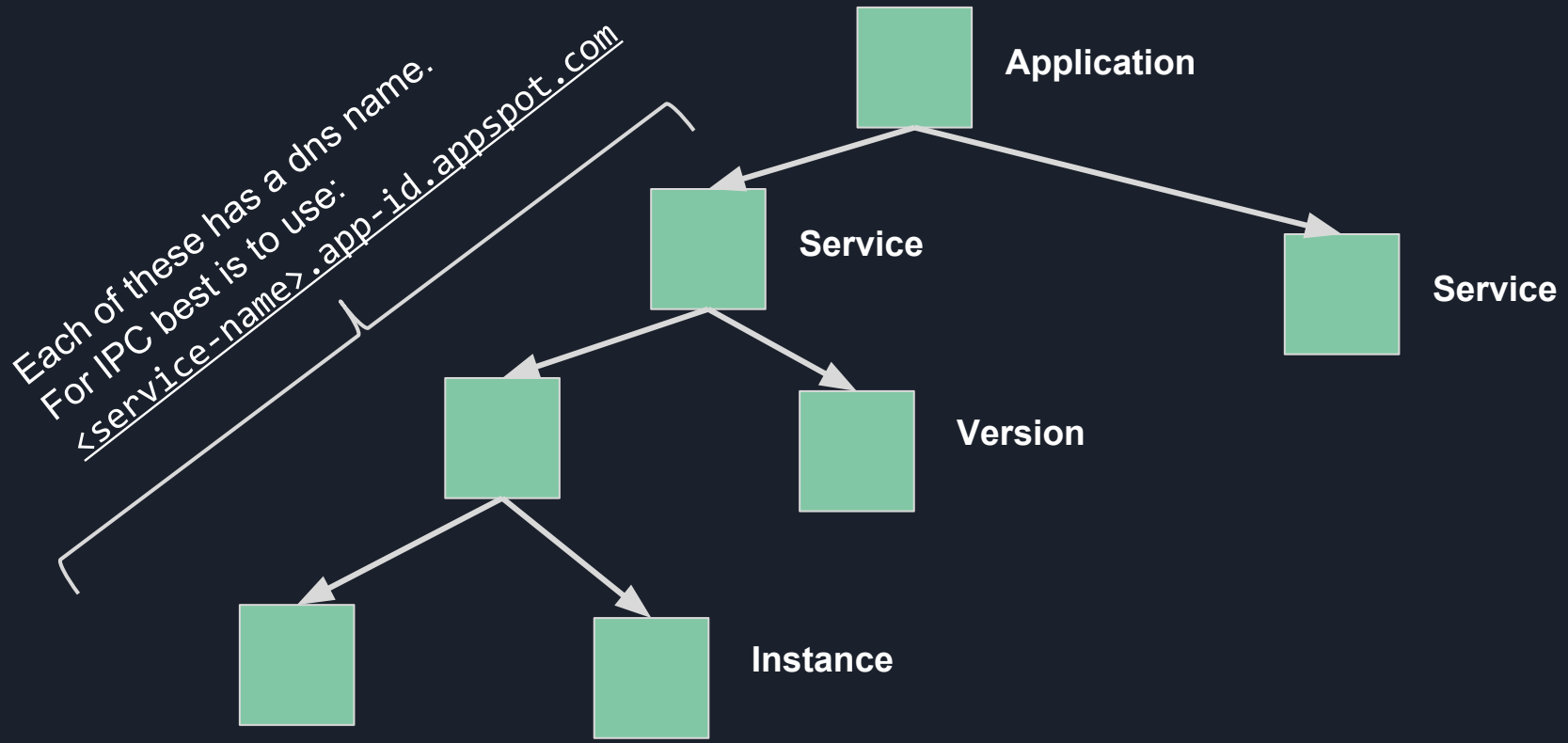


GCP + App Engine Concepts



- App Engine is a Singleton per-project
- Services are self-contained code + configuration that can interact with other services
- GCP handles dns, https, autoscaling and load-balancing

GCP + App Engine Concepts



02. Tools

Setup GCloud

```
> brew cask install google-cloud-sdk
   ...
   🍺  google-cloud-sdk was successfully installed!

> gcloud auth login
   You are now logged in as [---].
   Your current project is [None].  You can change this setting by running:
     $ gcloud config set project PROJECT_ID

> gcloud init

> gcloud app deploy app.yaml
```

AppEngine Internals

What does `gcloud app deploy` actually do?

- Copy code from working directory into GCP
- Run `docker build` creating an image
- Run `docker push` to store the image in GCR
- Stand up a new instance and run the image as a container
- Reconfigure the Load Balancer and disable old versions (maybe)